(a) providing a test cell comprising DNA defining a morphogen-responsive transcription activating element, and, in operative association therewith, a reporter gene encoding a detectable gene product, said DNA, when present in a morphogen-responsive cell contacted with the morphogen, serving to induce transcription of said reporter gene;

(b) exposing said test cell to a candidate compound; and

(c) detecting expression of said detectable gene product, wherein an increase in expression of said detectable gene product after exposing said test cell to said candidate compound indicates the ability of said candidate compound to induce the morphogen mediated biological effect;

wherein said morphogen-mediated biological effect requires the presence of said morphogen-responsive transcription activating element.

2. (**Reiterated**) The method of claim 1 wherein said morphogen responsive transcription activating element binds with a protein having general DNA-binding properties of a MEF-2 family protein, said DNA binding inducible by performing step (b).

3. (**Amended**) The method of claim 1, wherein said morphogen responsive transcription activating element comprises a sequence that hybridizes to an MEF-2 binding site sequence.

4. (**Reiterated**) The method of claim 1 wherein said morphogen responsive transcription activating element comprises nucleotides 699-731 of Seq. ID No. 1.

5. (**Reiterated**) The method of claim 1 wherein said morphogen responsive transcription activating element comprises nucleotides 682-761 of Seq. ID No. 1.

6. (**Reiterated**) The method of claim 1 wherein said morphogen responsive transcription activating element comprises a sequence of A and T residues.

7. (**Reiterated**) The method of claim 6 wherein the sequence of A and T residues comprises nucleotides 699-711 of Seq. ID No. 1.

8. (**Reiterated**) The method of claim 6 wherein the sequence of A and T residues comprises nucleotides 703-724 of Seq. ID No. 1.

9. (**Reiterated**) The method of claim 6 wherein the A and T residues are adjacent to an AP-1 biding site sequence.

(NE) WAS CANCELLED

10. (**Amended**) The method of claim 9 wherein the AP-1 binding site sequence comprises nucleotides 715-724 of Seq. ID No. 1, or the nucleotide sequence of Seq. ID No. 2.

13. (**Amended**) A method of producing a compound competent to induce a morphogen-mediated biological effect, the method comprising:

C1

a. obtaining said compound by screening at least one candidate compound according to the method of claim 1 or 2; and

b. producing said compound or a derivative thereof having substantially the same ability as said compound to induce said morphogen mediated biological effect.

15. (**Amended**) A method of assessing whether a sample comprises a substance competent to bind to DNA, the sequence of which comprises nucleotides 699-731 of Seq. ID No. 1, the method comprising:

(NE) WAS CANCELLED

a. providing DNA, the sequence of which comprises nucleotides 699-731 of Seq. ID No. 1;

b. exposing said DNA to said sample; and,

c. detecting the binding of said substance to said DNA.

C2

30. (**Amended Twice**) A method of detecting a morphogen-mediated biological effect, the method comprising detecting DNA binding of a protein that induces said morphogen-mediated biological effect, said protein having a polypeptide sequence of a morphogen-inducible DNA binding protein which can interact with nucleotides 699-711, 715-724, 699-731, 682-731, 703-724 or 682-761 of SEQ ID NO: 1.

31. (**Reiterated**) The method of claim 30 comprising the additional step of providing a morphogen or a morphogen analog to a morphogen responsive cell prior to said detecting step, and wherein said DNA binding is detected within about 2 to 12 hours.

32. (**Reiterated**) The method of claim 30 comprising the additional step of providing a morphogen or morphogen analog to a morphogen responsive cell prior to said detecting step, and wherein said DNA binding is detected within about 2 to 6 hours.

33. (**Reiterated**) The method of claim 1, 2, 15 or 30 comprising part of a medium or high-flux screening assay.

36. (**Amended Twice**) A method for identifying a candidate compound that induces a morphogen-mediated biological effect, the method comprising:

(a) providing a test cell comprising DNA defining a morphogen-responsive transcription activating element, said DNA, when present in a morphogen responsive cell contacted with the morphogen, serving to induce transcription of a gene operatively associated with said transcription activating element;

(b) exposing said test cell to a candidate compound; and

(c) detecting morphogen inducible DNA binding to said transcription activating element by a cellular protein, wherein an increase in said binding after exposing said test cell to said candidate compound indicates the ability of said candidate compound to induce said morphogen mediated biological effect,

wherein step (c) occurs within approximately 2-12 hours of completing step (b), and wherein said morphogen-mediated biological effect requires the presence of said morphogen-responsive transcription activating element.

(NE WAS CANCELED)

43. (**Amended**) The method of claim 1 wherein the morphogen is OP-1.

C3

44. (**Amended**) The method of claim 2, wherein said morphogen-responsive transcription activating element also binds with a second protein having general DNA-binding properties of an AP-1 family protein.

Please also add the following new claims:

C4

45. (**New**) The method of claim 1, wherein the morphogen is OP-2, BMP-2, BMP-3, BMP-4, BMP-5, BMP-6, Vg1, Vgr-1, DPP, or 60A.

46. (**New**) The method of claim 43 or 45, wherein the morphogen is of human origin.

47. (**New**) The method of claim 1, wherein said morphogen-mediated biological effect is: stimulating proliferation of mammalian bone / cartilage progenitor cells, stimulating differentiation of mammalian bone / cartilage progenitor cells, supporting growth and maintenance of mammalian endochondrial bone tissue, delaying or mitigating the onset of senescence or quiescence-associated loss of phenotype or tissue function, stimulating phenotypic expression of differentiated cells, inducing redifferentiation of transformed cells, induction of VEGF expression, induction of PTH-mediated cAMP production in osteoblast, or induction of neuronal marker.

C4 cont.

48. (**New**) The method of claim 47, wherein said neuronal marker is L1 or N-CAM.

49. (**New**) The method of claim 1, wherein said morphogen-mediated biological effect is induction of mitogenesis and phenotypic markers for chondrocyte or osteoblast differentiation.

50. (**New**) The method of claim 49, wherein said phenotypic markers is: type I collagen, type II collagen, type X collagen, alkaline phosphatase, osteocalcin, N-cadherin, N-CAM, or MSX-2.

The claims presented above incorporate changes as indicated by the marked-up versions below.

1. (**Amended Twice**) A method for identifying a compound that induces a morphogen-mediated biological effect ~~the formation of functional, differentiated mammalian tissue from uncommitted mammalian cells~~, the method comprising ~~the steps of~~:

   (a) providing a test cell comprising DNA defining a morphogen-responsive transcription activating element, and, in operative association therewith, a reporter gene encoding a detectable gene product, said DNA, when present in a morphogen-responsive cell contacted with the morphogen, serving to induce transcription of said reporter gene;

   (b) exposing said test cell to a candidate compound; and

(c) detecting expression of said detectable gene product, ~~said expression indicating~~ wherein an increase in expression of said detectable gene product after exposing said test cell to said candidate compound indicates the ability of said candidate compound to induce the morphogen mediated biological effect;

wherein said morphogen-mediated biological effect requires the presence of said morphogen-responsive transcription activating element.

3. (**Amended**) The method of claim 1, wherein ~~the nucleotide sequence of~~ said morphogen responsive transcription activating element comprises a sequence that hybridizes to an MEF-2 binding site sequence.

10. (**Amended**) The method of claim 9 wherein the AP-1 binding site sequence comprises nucleotides 715-724 of Seq. ID No. 1, or the nucleotide sequence of ~~depicted in~~ Seq. ID No. 2.

13. (**Amended**) A method of producing a compound competent to induce a morphogen-mediated biological effect, the method comprising ~~the steps of~~:

a. obtaining said compound by screening at least one candidate compound according to the method of claim 1 or 2; and

b. producing said compound or a derivative thereof having substantially the same ability as said compound to induce said morphogen mediated biological effect.

15. (**Amended**) A method of assessing whether a sample comprises a substance competent to bind to DNA, the sequence of which comprises nucleotides 699-731 of Seq. ID No. 1, the method comprising ~~the steps of~~:

a. providing DNA, the sequence of which comprises nucleotides 699-731 of Seq. ID No. 1;

b. exposing said DNA to said sample; and,

c. detecting the binding of said substance to said DNA.

30. (**Amended Twice**) A method of detecting a morphogen-mediated biological effect, the method comprising ~~the step of:~~ detecting ~~the~~ DNA binding of a protein that induces said morphogen-mediated biological effect ~~the formation of functional, differentiated mammalian tissue from uncommitted mammalian cells~~, said protein having a polypeptide

sequence ~~chain selected from the group consisting~~ of ~~(a)~~ a morphogen-inducible DNA binding protein which can interact with nucleotides 699-711, 715-724, 699-731, 682-731, 703-724 or 682-761 of SEQ ID NO: 1~~; (b) species or allelic variants of (a); (c) truncated amino acid sequences of any of (a) and (b) inducible by a morphogen or analog thereof under native conditions, and (d) biosynthetic or recombinant variants of any of the above~~.

36. (**Amended Twice**) A method for identifying a candidate compound that induces a morphogen-mediated biological effect ~~the formation of functional, differentiated mammalian tissue from uncommitted mammalian cells~~, the method comprising ~~the steps of~~:

(a) providing a test cell comprising DNA defining a morphogen-responsive transcription activating element, said DNA, when present in a morphogen responsive cell contacted with the morphogen, serving to induce transcription of a ~~reporter~~ gene operatively associated with said transcription activating element;

(b) exposing said test cell to a candidate compound; and

(c) detecting morphogen inducible DNA binding to said transcription activating element by a cellular protein, ~~said binding indicating~~ wherein an increase in said binding after exposing said test cell to said candidate compound indicates the ability of said candidate compound to induce said morphogen mediated biological effect,

wherein step (c) occurs within approximately 2-12 hours of completing step (b), and wherein said morphogen-mediated biological effect requires the presence of said morphogen-responsive transcription activating element.

43. (**Amended**) The method of claim 1 wherein the morphogen is OP-1 ~~or a related molecule~~.

44. (**Amended**) The method of claim 2, wherein said morphogen-responsive transcription activating element ~~the protein has DNA~~ also binds with a second protein having general DNA-binding ~~has binding~~ properties of an AP-1 family protein ~~binding sequence~~.